MYASNIKOV, Aleksandr Leonidovich, prof., red.; RYVKIN, Izrail' Abramovich; BONDARENKO, B.A., red.

[Incidence of hypertension and coronary arteriosclerosis and living conditions] Rasprostranenie gipertonicheskoi bolezni i koronarnogo ateroskleroza i usloviia zhizni; sbornik statei. Leningrad, Meditsina, 1964. 166 p. (MIRA 17:8)

1. Direktor Instituta terapii AMN SSSR, deystvitel'nyy chlen AMN SSSR (for Myasnikov). 2. Institut terapii AMN SSSR (for Ryvkin).

BOGATSKIY, Georgiy Filippovich, kand. tekhn. nauk; BONDARENKO, Boris Andreyevich, kand. arkhit.; LEONTOVICH, Vladimir Vsevolodovich,, inzh.; SURYGINA, E., red.

[Course planning of populated places] Kursovoe proektirovanie naselennykh mest. Kiev, Budivel'nyk, 1964. 142 p. (MIRA 17:10)

BONDARENKO, B.A.

Polynomial solutions of static equations, and harmonic polynomials. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk 9 no.5: 82-83 '65. (MIRA 18:11)

1. Institut matematiki imeni Romanovskogo AN UzSSR. Submitted May 21, 1965.

BONDARENKO, B.A.

Application of alternating methods for solution of problems on torsion of a prismatic T bar. Trudy Inst. mat. i mekh. AN Uz. SSR no.18:43-51 '56. (MLRA 10:4)
(Torsion) (Approximate computation)

SOV/124-57-8-9256

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 98 (USSR)

AUTHOR: Arzhanykh, I. S., Bondarenko, B. A.

TITLE: On the Expression of the General Static Solutions of the Theory of Elasticity by Means of Definite Integrals (O predstavlenii obshchikh resheniy statiki teorii uprugosti opredelennymi integralami)

PERIODICAL: Tr. In-ta matem. i mekhan. AN UzSSR, 1955, Nr 16, pp 34-38

ABSTRACT: The harmonic functions contained in the expressions of the general solutions of the elasticity-theory equations in P. F. Papkovich's form, supplemented by the component rot r x H, are expressed in the integral form of Whittaker

$$G_x = \int_{-\pi}^{\pi} g_x (x \cos \phi + y \sin \phi + iz, \phi)\, d\phi$$

etc.

The paper provides the expressions of deflections and stresses in terms of six arbitrary functions.

Card 1/1

A. I. Lur'ye

SOV/124-58-4-4383

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 4, p 98 (USSR)

AUTHORS: Arzhanykh, I. S., Bondarenko, B. A.

TITLE: On the Differential Equations for the Stress Functions of an Anisotropic Elastic Substance (O differentsial'nykh uravneniyakh dlya funktsiy napryazheniy anisotropnogo uprugogo tela)

PERIODICAL: Tr. In-ta matem. i mekhan. AN UzSSR, 1956, Nr 18, pp 35-41

ABSTRACT: The authors offer six differential equations of motion for a uniform elastic anisotropic medium containing 15 arbitrary functions, with the help of which it is possible to form various modifications of the differential equations of motion. The components of the displacement vector are expressed by the derivatives of the 15 functions, while six functions are not included at all.

1. Elastomers--Stresses 2. Differential equations
3. Functions

L. N. Ter-Mkrtich'yan

Card 1/1

SOV/124-58-11-13038

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 168 (USSR)

AUTHOR: Bondarenko, B. A.

TITLE: On One Class of Solutions for Dynamic Equations of the Theory of Elasticity (Ob odnom klasse resheniy dinamicheskikh uravneniy teorii uprugosti)

PERIODICAL: Tr. In-ta matem. i mekhan. AN UzSSR, 1957, Nr 21, pp 41-49

ABSTRACT: By employing the reviewer's formulae of the dynamic displacement vector (Tr. In-ta matem. i. mekhan. AN UzSSR 1954, Nr 13, pp 19-41; RZhMekh, 1957, Nr 7, abstract 7469) and by utilizing the Whittaker concept of a wave function [Whittaker, E. T., Watson, G. N., Kurs sovremennogo analiza. (A Course in Modern Analysis). Vol 2. Moscow, 1934], the author obtains an explicit expression for the components of a dynamic displacement vector expressed in two versions by means of generic functions of the C^3 class.

I. S. Arzhanykh

Card 1/1

SOV/124-58-3-3158

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 89 (USSR)

AUTHOR: Bondarenko, B. A.

TITLE: The Application of an Alternative Method to the Solution of a Problem on the Torsion of a T-section Prismatic Rod (Primeneniye al'terniruyushchego metoda k resheniyu zadachi o kruchenii prizmaticheskogo sterzhnya tavrovogo secheniya)

PERIODICAL: Tr. In-ta matem. i mekhan. AN UzSSR, 1956, Nr 18, pp 43-51

ABSTRACT: A problem on the torsion of a T-section prismatic rod is solved by Schwarz' alternative method of the solution of Dirichlet's problem for harmonic functions in an example when the cross-sectional area is the sum of two (according to the meaning of the theory of multiples) areas, in this case of two rectangles. Recurrent formulae are presented for the calculation of the Fourier coefficients which form a part of the expression of the torsion function for one of the two rectangles by means of the Fourier coefficients from the expression of the torsion function for the other rectangle. The coefficients $\delta_k^{(0)}$, A_k, $\eta_s^{(1)}$, $\eta_s^{(2)}$, and L_s are computed incorrectly.

Card 1/1

N. O. Gulkanyan

BUNDARENKO, B.M.

PHASE I BOOK EXPLOITATION SOV/4796

Akademiya nauk Uzbekskoy SSR, Tashkent. Institut matematiki i mekhaniki

Issledovaniya po matematicheskomu analizu i mekhanike v Uzbekistane (Research in Mathematical Analysis and Mechanics in Uzbekistan) Tashkent, Izd-vo AN Uzbekskoy SSR, 1960. 259 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR. Institut matematiki i mechaniki imeni V.I. Romanovskogo.

Resp. Ed.: I.S. Arzhanykh, Corresponding Member, Academy of Sciences UzSSR; Ed.: I.G. Gaysinskaya; Tech. Ed.: Z.P. Gor'kovaya.

PURPOSE: This collection of articles is intended for mathematicians, mechanics, aspirants, and students taking advanced courses in divisions of physics and mathematics at universities and pedagogical schools of higher education.

COVERAGE: The collection contains 17 articles dealing with the results of investigations on the theory of integrating differential equations im mathematical physics and mechanics, the theory of numbers, and the problem of the best approximation of functions. Individual articles discuss elasticity, flow close to a

Card 1/4

rotating disk, transverse vibrations of beams, motion of an automobile after impact, thermal stress, etc. No personalities are mentioned. References accompany 14 articles.

TABLE OF CONTENTS:

S/044/62/000/001/038/061
C111/C222

AUTHOR: Bondarenko, B.A.

TITLE: On the gradient and vortex solutions of the dynamic equations of elasticity theory

PERIODICAL: Referativnyy zhurnal. Matematika, no. 1, 1962, 59, abstract 1 B 282.("Issled. po matem. analizu i mekhanike v Uzbekistane". Tashkent, AN UzSSR, 1960, 17-29)

TEXT: The gradient and vortex parts of the general solution of the dynamic Lamé equation

$$\alpha \text{ grad div } \mathbf{u} - \beta \text{ rot rot } \mathbf{u} - \frac{\partial^2 \mathbf{u}}{\partial t^2} = 0$$

are written with the help of the formulas of I.S. Arzhanykh (RZhMat,1956, 2264) in spherical coordinates.

[Abstracter's note : Complete translation.]

Card 1/1

27143
S/166/61/000/004/001/007
B112/B102

24 4200 1105 1327 1344

AUTHOR: Bondarenko, B. A.

TITLE: Potential and vortex solutions of the dynamic theory of elasticity in the case of dispersion

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1961, 3 - 11

TEXT: The author solves the equation:

$\alpha \operatorname{grad} \operatorname{div} \vec{u} - \beta \operatorname{curl} \operatorname{curl} \vec{u} - \partial^2 \vec{u}/\partial t^2 - \delta \vec{u} = 0.$

Its solutions have the form:

$\vec{u} = \vec{B} - \operatorname{grad}(\varkappa_0(\vec{r},\vec{B}) + 2\frac{\varkappa_0}{\beta} D_t\varphi),$

$\vec{u} = \vec{A} - \operatorname{curl}(\lambda_0[\vec{r},\vec{A}] - 2\frac{\lambda_0}{\alpha} D_t\vec{\Psi}).$

$\vec{r}$ is the position vector with the components x, y, z:
$\varkappa_0 = (\alpha - \beta)/2\alpha$, $\lambda_0 = (\alpha - \beta)/2\beta$. $\vec{B}$, $\vec{A}$, φ and $\vec{\Psi}$ are determined from the equations

Card 1/2

27143
S/166/61/000/004/001/007
B112/B102

Potential and vortex solutions of the ...

$\square_\beta \vec{B} = 0$, $\square_\alpha \varphi = -\alpha \varkappa_0 (\vec{r}, \vec{B})$,
$\square_\alpha \vec{A} = 0$, $\square_\beta \vec{\Psi} = -\beta \lambda_0 [\vec{r}, \vec{A}]$.

The operators $\square_\alpha$, $\square_\beta$, and D_t are:

$\square_\alpha \equiv \alpha \nabla^2 - D_t$, $\square_\beta \equiv \beta \nabla^2 - D_t$, $D_t \equiv \partial^2/\partial t^2 + \delta$.

I. S. Arzhanykh (Informatsionnyy byulleten', No. 1, VINITI, M., AN SSSR, 1960) is mentioned. There are 4 references: 3 Soviet and 1 non-Soviet.

ASSOCIATION: Institut matematiki im. V. I. Romanovskogo AN UzSSR
(Institute of Mathematics imeni V. I. Romanovskiy AS Uzbekskaya SSR)

SUBMITTED: March 1, 1961

Card 2/2

S/044/62/000/009/040/069
A060/A000

AUTHOR: Bondarenko, B. A.

TITLE: Approximate solution of the first and second fundamental problems of the theory of elasticity for a parallelepiped

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 24, abstract 9V121 ("Tr. In-ta matem. AN UzSSR", 1961, no. 23, 93 - 110)

TEXT: A sequence of polynomial solutions for the homogeneous equations of the three-dimensional static theory of elasticity is constructed. To solve the problems mentioned in the title the author applies the method of least squares, using the polynomials constructed by him as coordinate functions.

S. G. Mikhlin

[Abstracter's note: Complete translation]

Card 1/1

L 17401-63 EWT(m)/EWP(r)/EWP(q)/BDS AFFTC/ASD/APGC EM/JD
S/124/63/000/004/030/064

AUTHOR: Bondarenko, B. A.

TITLE: An approximate solution to the first and second basic problems of the theory of elasticity for a parallelepiped

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 4, 1963, 3, abstract 4V17 (Tr. In-ta matem. AN UzSSR, vyp. 23, 1961, 93-110

TEXT: The author works out a succession of polynomial solutions of homogeneous equations for the space statistical problem of the theory of elasticity. To solve problems referred to in the title, the author makes use of the method of least squares, setting up polynomials thus obtained as coordinate functions. S. G. Mikhlin.

[Abstracter's note: Complete translation.]

Card 1/1

KRAVCHINSKIY, Boris Davydovich; BONDARENKO, B.A., red.; LEBEDEVA, G.T., tekhn. red.

[Physiology of the water-salt metabolism of body fluids] Fiziologiia vodno-solevogo obmena zhidkostei tela. Leningrad, Medgiz, 1963. 310 p. (MIRA 16:10)
(WATER METABOLISM) (BODY FLUIDS)

BONDARENKO, B.A. (Leningrad, D-88, Moyka, d.40, kv.3);
GLUZBARG, B.Ye. (Leningrad, D-11, ul. Rakova, d.15, kv.97)

Clinical forms of lung cancer in the initial stages. Vop. onk. 9 no.6:9-14 '63. (MIRA 17:8)

1. Iz kliniki fakul'tetskoy terapii (nachal'nik - prof. V.A. Beyyer) Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova i Bassejnovoy klinicheskoy bol'nitsy imeni Chudnovskogo (glavnyy vrach - A.L. Matusov).

BONDARENKO, B.A., dotsent; GLUZBARG, B. Ye.

Case of isolated lymphogranulomatosis of the small intestine; an abstract. Probl. gemat. i perel. krovi 9 no.12:54 D '64
(MIRA 18:1)

1. Kafedra fakul'tetskoy terapii (nachal'nik - prof. V.A. Beyer) Voyenno-meditsinskoy akademii imeni S.M. Kirova i basseynovaya klinicheskaya bol'nitsa imeni Chudnovskogo (glavnyy vrach A.A. Makarov), Leningrad.

L 23754-66 EWT(d)/EWT(m)/EWP(w) IJP(c) EM

ACC NR: AP6008547 SOURCE CODE: UR/0166/66/000/001/0003/0011

AUTHOR: Bondarenko, B. A.

ORG: Mathematics Institute im. V. I. Romanovskiy, AN UzSSR (Institut matematiki AN UzSSR)

TITLE: Polynomial solutions to a system of differential equations in the statics of elasticity theory (The essence of this paper was reported at the II All-Union Conference on Computational Mathematics held in Moscow in January 1965)

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1966, 3-11

TOPIC TAGS: boundary value problem, elasticity theory, differential equation system, solid statics

ABSTRACT: Boundary value problems in the statics of elasticity theory in transfers consist of the determination of the functions u, v, and w to satisfy the system

$$\left.\begin{aligned} \gamma\frac{\partial\Delta}{\partial x}+\nabla^2 u=0\\ \gamma\frac{\partial\Delta}{\partial y}+\nabla^2 v=0\\ \gamma\frac{\partial\Delta}{\partial z}+\nabla^2 w=0 \end{aligned}\right\} \qquad (1)$$

Card 1/2

L 23754-66

ACC NR: AP6008547

and corresponding boundary conditions. In the system (1) Δ is the volumetric expansion, $\gamma = \frac{\lambda+\mu}{\mu}$, where λ, μ are elasticity constants. The least square method may be used to solve boundary problems. As shown by S. G. Mikhlin (Variatsionnyye metody v matematicheskoy fizike, M., Fizmatgiz, 1957), this method is most effective in the version when a system, every element of which satisfies the initial equations, is used as the coordinate functions. The purpose of the present article is the construction of linearly independent polynomial solutions to the system of differential equations (1), in order to employ the solutions for an approximate solution in the boundary value problem of statics of elasticity theory. The author expresses deep gratitude to S. G. Mikhlin for a discussion and remarks on the article. Orig, art. has: 30 formulas.

SUB CODE: 12, 20 / SUBM DATE: 27Jul65 / ORIG REF: 001

Card 2/2

BONDARENKO, B.B.

Case of osteolysis of medicinal origin. Vest. rent. i rad. 39 no.4: 78 Jl-Ag '64. (MIRA 18:7)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. M.L. Shcherba [deceased]) i kafedra rentgenologii i radiologii (zav. - prof. Rokhlin) I Leningradskogo meditsinskogo instituta imeni Pavlova.

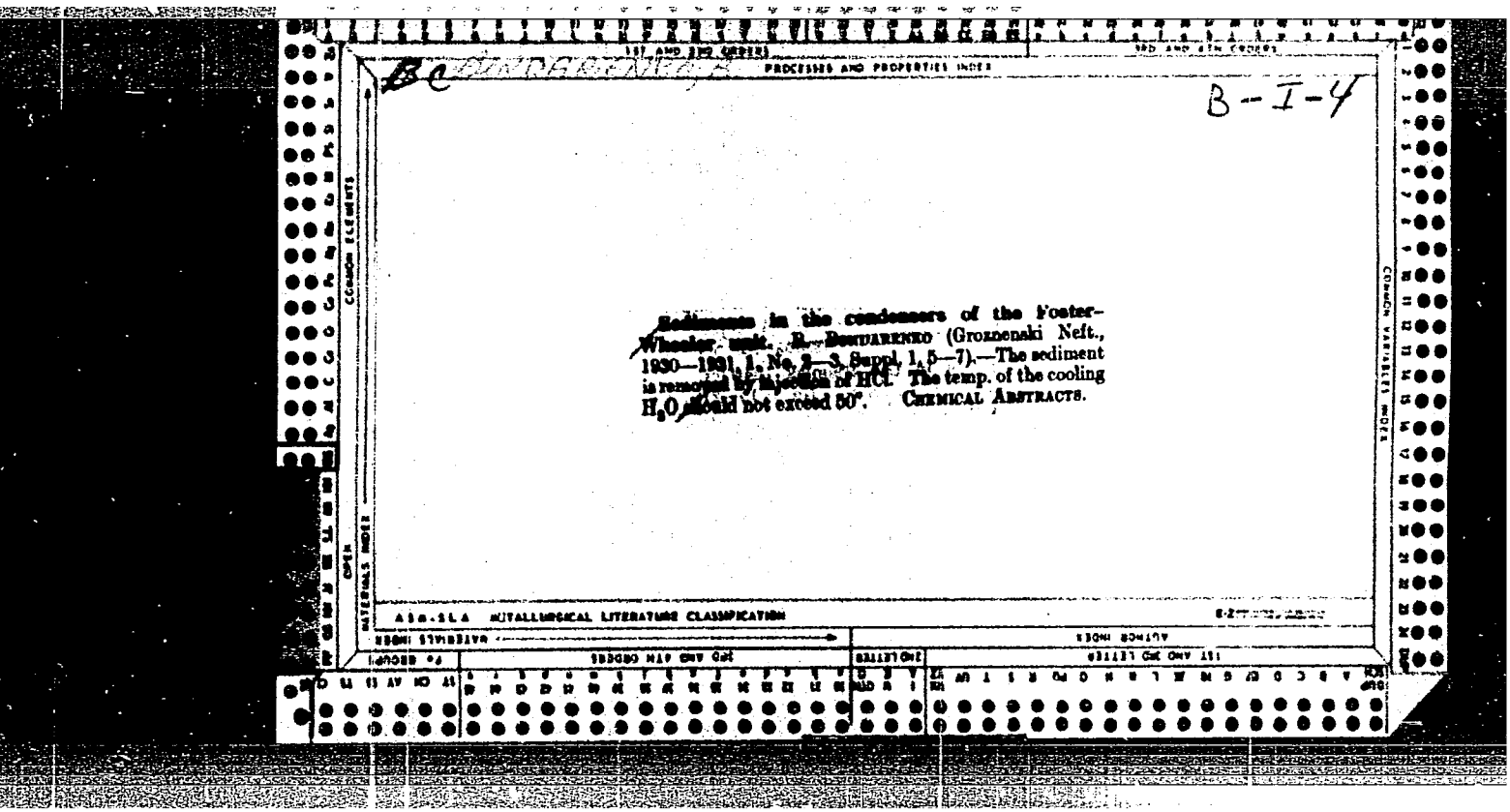
BONDARENKO, B.B.

Mechanisms of aldosterone secretion control; survey of the literature. Probl. endok. i gorm. 11 no.1:114-119 Ja-F '65. (MIRA 18:5)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - prof. M.L. Shcherba [deceased]) 1 Leningradskogo meditsinskogo instituta imeni Pavlova.

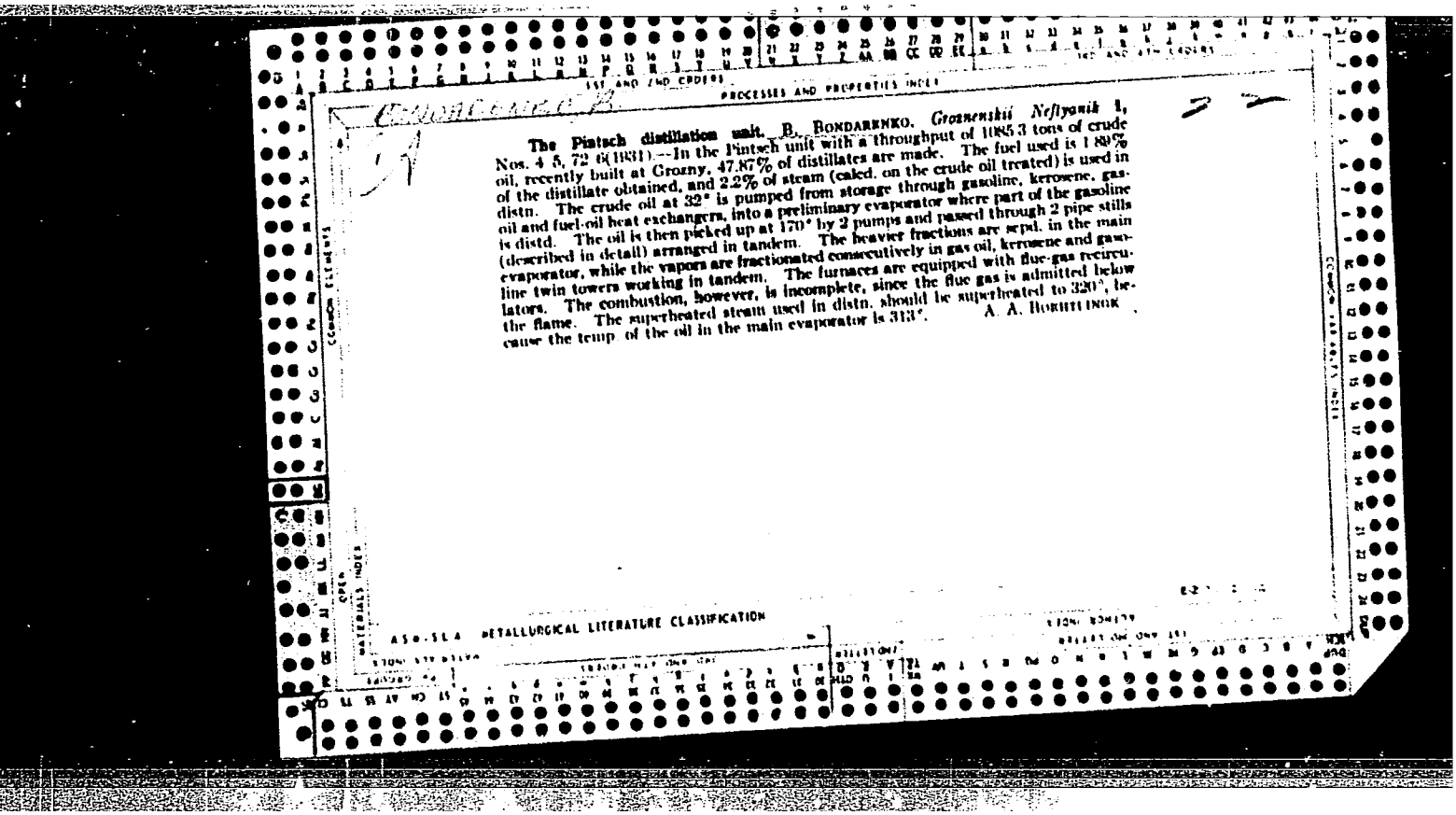
BONDARENKO, B.B. (Leningrad)

Effect of aldosterone on electrolyte metabolism and kidney function; a survey of the literature. Pat. fiziol. i eksp. terap. 9 no.3:84-89 My-Je '65. (MIRA 18:9)



B-I-4

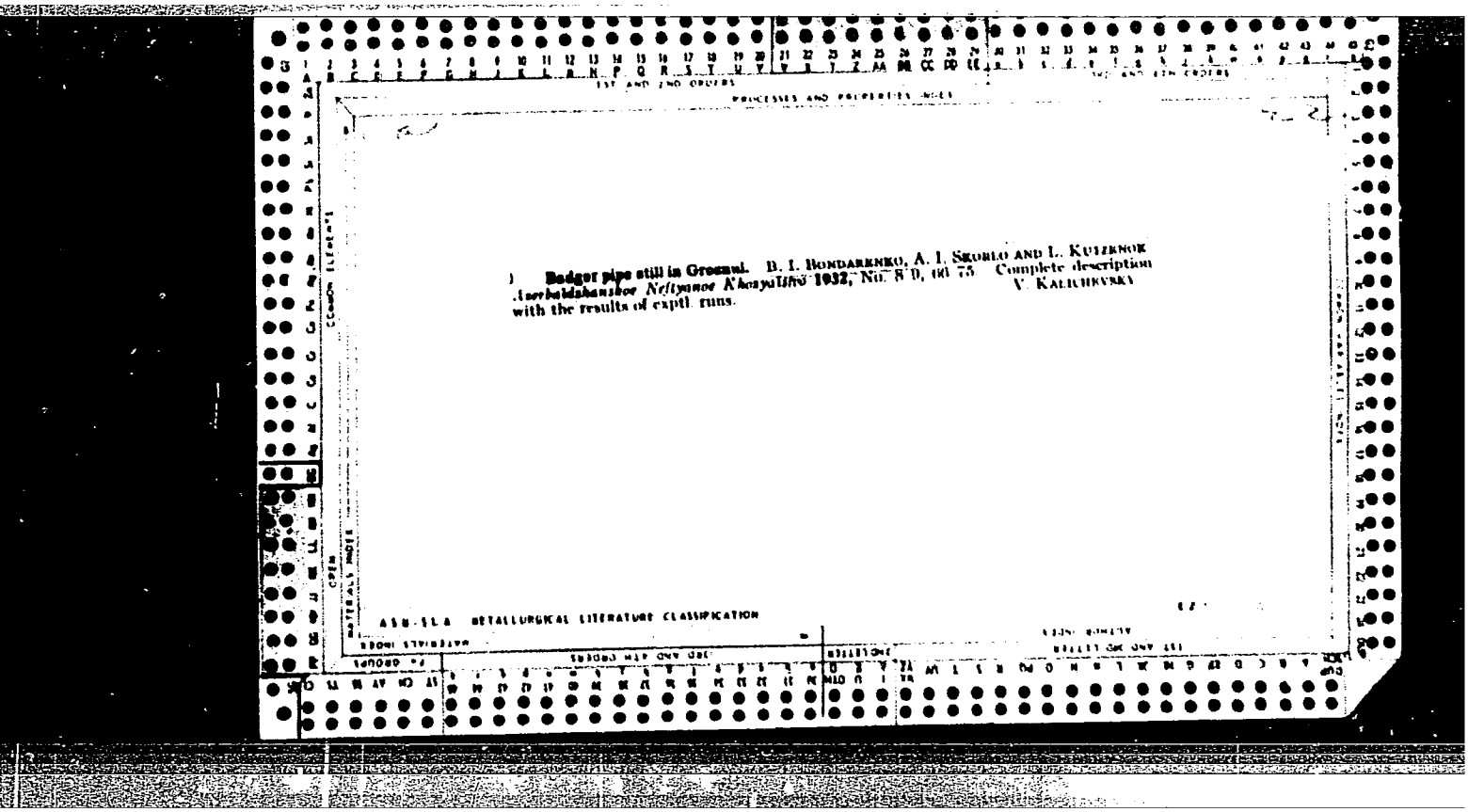
Sediments in the condensers of the Foster-Wheeler unit. B. BONDARENKO (Groznenski Neft., 1930—1931, 1, No. 2—3, Suppl. 1, 5—7).—The sediment is removed by injection of HCl. The temp. of the cooling H_2O should not exceed 50°. CHEMICAL ABSTRACTS.



PROCESSES AND PROPERTIES INDEX

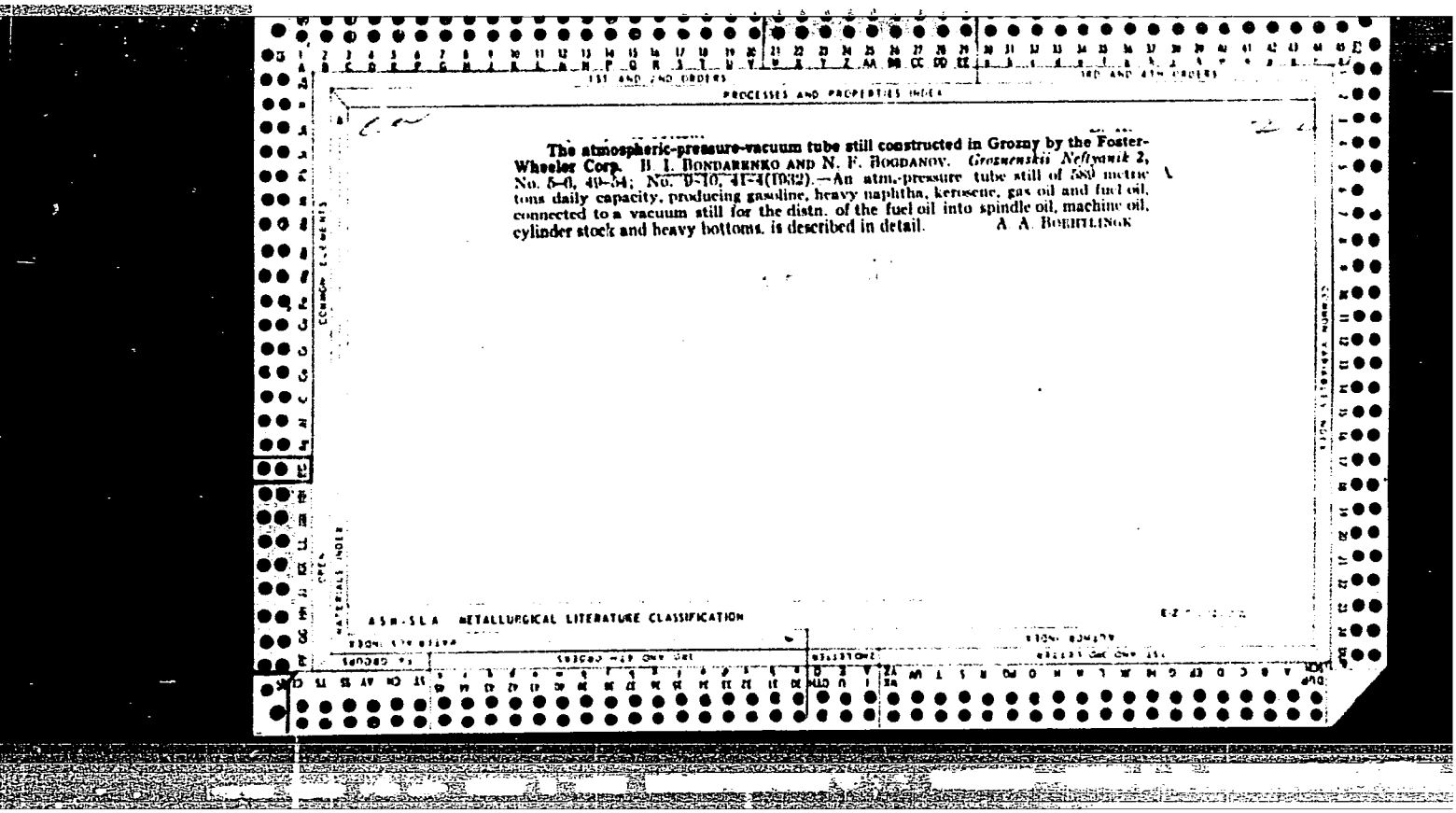
The Pintsch distillation unit. B. Bondarenko. *Groznenskii Neftyanik* 1, Nos. 4-5, 72-6(1931).—In the Pintsch unit with a throughput of 1085.3 tons of crude oil, recently built at Grozny, 47.87% of distillates are made. The fuel used is 1.89% of the distillate obtained, and 2.2% of steam (calcd. on the crude oil treated) is used in distn. The crude oil at 32° is pumped from storage through gasoline, kerosene, gas-oil and fuel-oil heat exchangers, into a preliminary evaporator where part of the gasoline is distd. The oil is then picked up at 170° by 2 pumps and passed through 2 pipe stills (described in detail) arranged in tandem. The heavier fractions are sepd. in the main evaporator, while the vapors are fractionated consecutively in gas oil, kerosene and gasoline twin towers working in tandem. The furnaces are equipped with flue-gas recirculators. The combustion, however, is incomplete, since the flue gas is admitted below the flame. The superheated steam used in distn. should be superheated to 320°, because the temp. of the oil in the main evaporator is 313°. A. A. Boguslavsk

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Badger pipe still in Greenl. B. I. BONDARENKO, A. I. SKOBLO AND L. KUTZENOK
Complete description
V. KALICHEVSKI
with the results of exptl. runs.

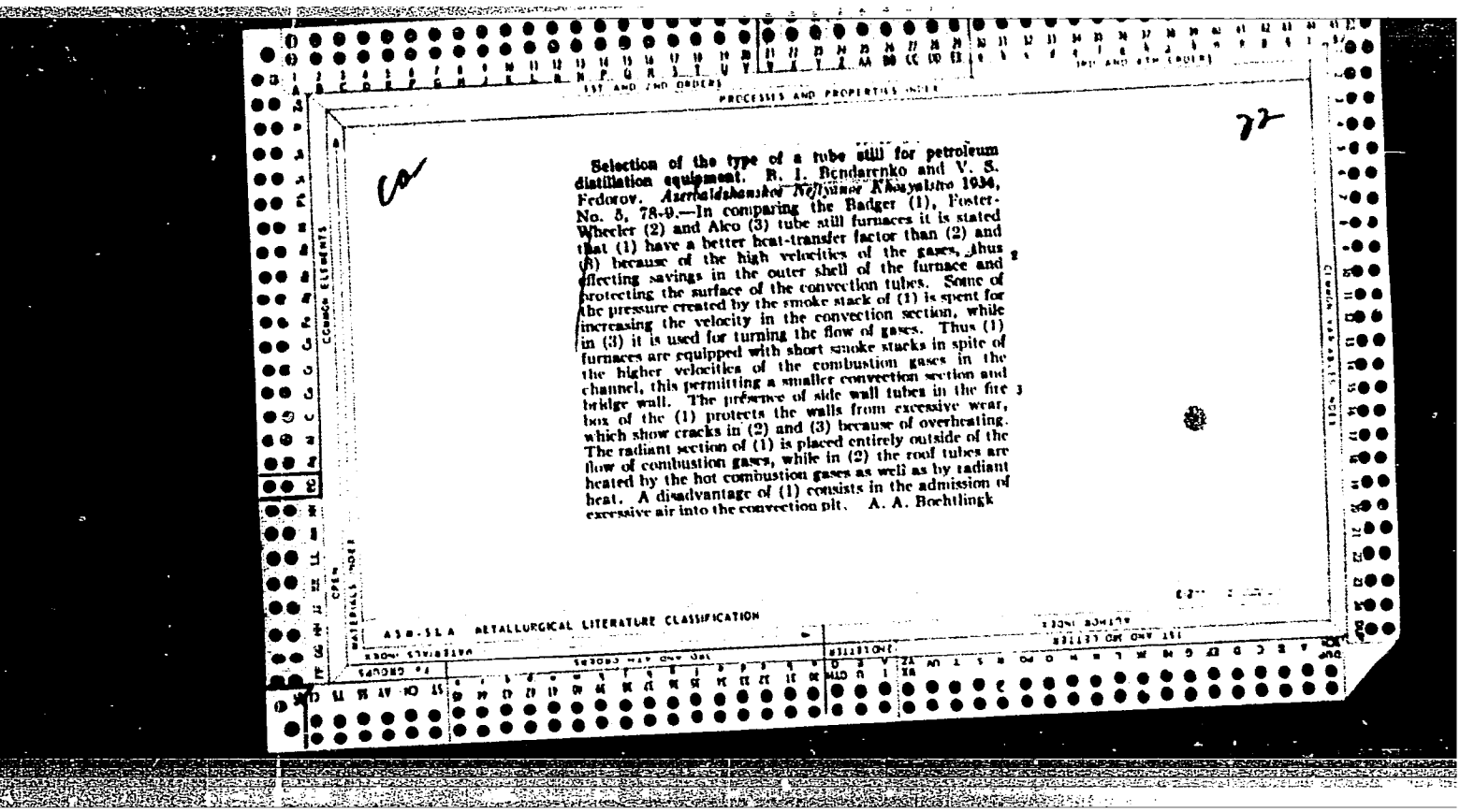
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



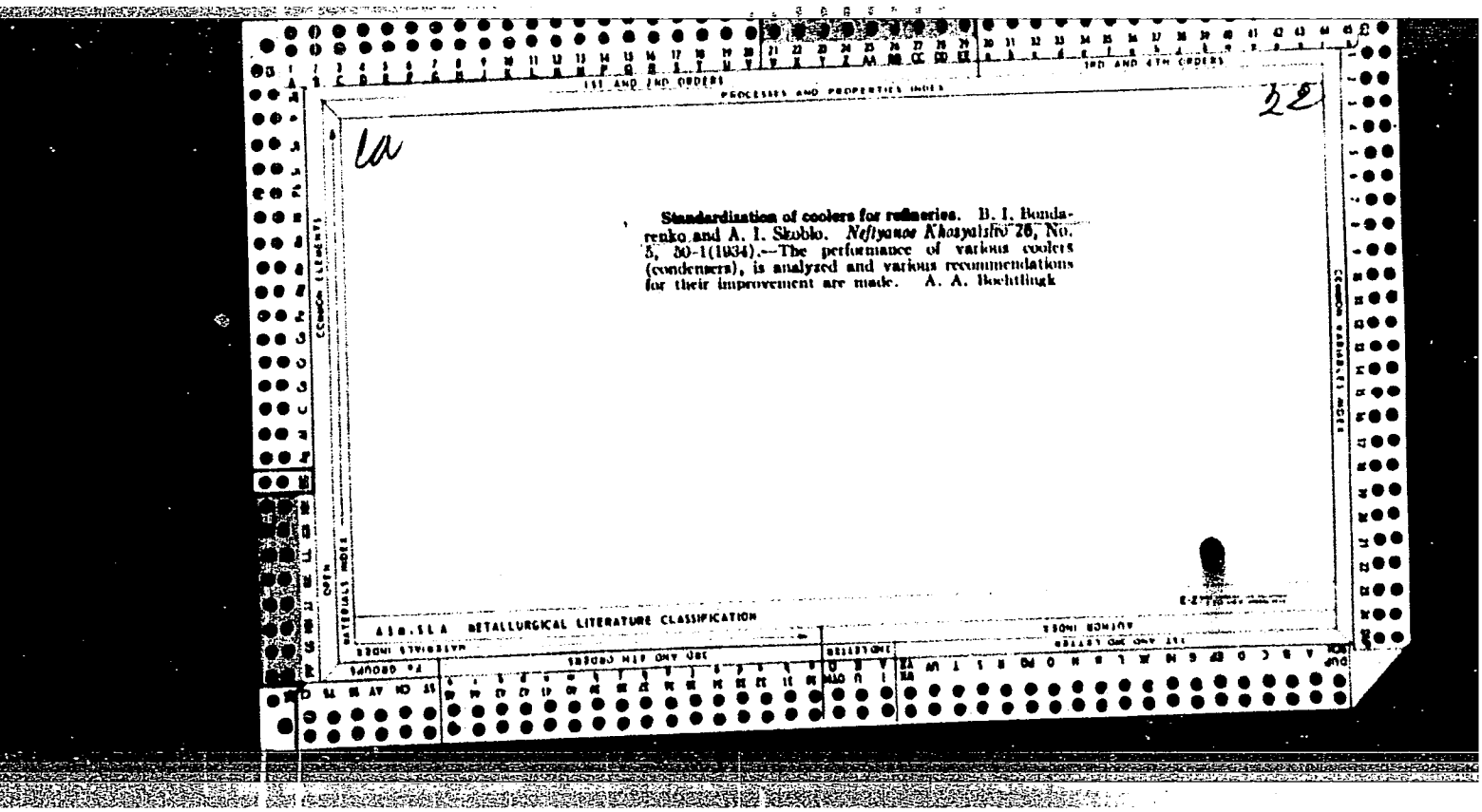
PROCESSES AND PROPERTIES INDEX

The atmospheric-pressure-vacuum tube still constructed in Grozny by the Foster-Wheeler Corp. B. I. BONDARENKO AND N. F. BOGDANOV. *Groznenskii Neftyanik* 2, No. 5-6, 49-54; No. 9-10, 41-4(1932).—An atm.-pressure tube still of 500 metric tons daily capacity, producing gasoline, heavy naphtha, kerosene, gas oil and fuel oil, connected to a vacuum still for the distn. of the fuel oil into spindle oil, machine oil, cylinder stock and heavy bottoms, is described in detail. A. A. BOEHTLINGK

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Selection of the type of a tube still for petroleum distillation equipment. R. I. Bendarenko and V. S. Fedorov. *Azerbaidzhanskoe Neftyanoe Khozyaistvo* 1934, No. 5, 78-9.—In comparing the Badger (1), Foster-Wheeler (2) and Alco (3) tube still furnaces it is stated that (1) have a better heat-transfer factor than (2) and (3) because of the high velocities of the gases, thus effecting savings in the outer shell of the furnace and protecting the surface of the convection tubes. Some of the pressure created by the smoke stack of (1) is spent for increasing the velocity in the convection section, while in (3) it is used for turning the flow of gases. Thus (1) furnaces are equipped with short smoke stacks in spite of the higher velocities of the combustion gases in the channel, this permitting a smaller convection section and bridge wall. The presence of side wall tubes in the fire box of the (1) protects the walls from excessive wear, which show cracks in (2) and (3) because of overheating. The radiant section of (1) is placed entirely outside of the flow of combustion gases, while in (2) the roof tubes are heated by the hot combustion gases as well as by radiant heat. A disadvantage of (1) consists in the admission of excessive air into the convection plt. A. A. Boehtlingk

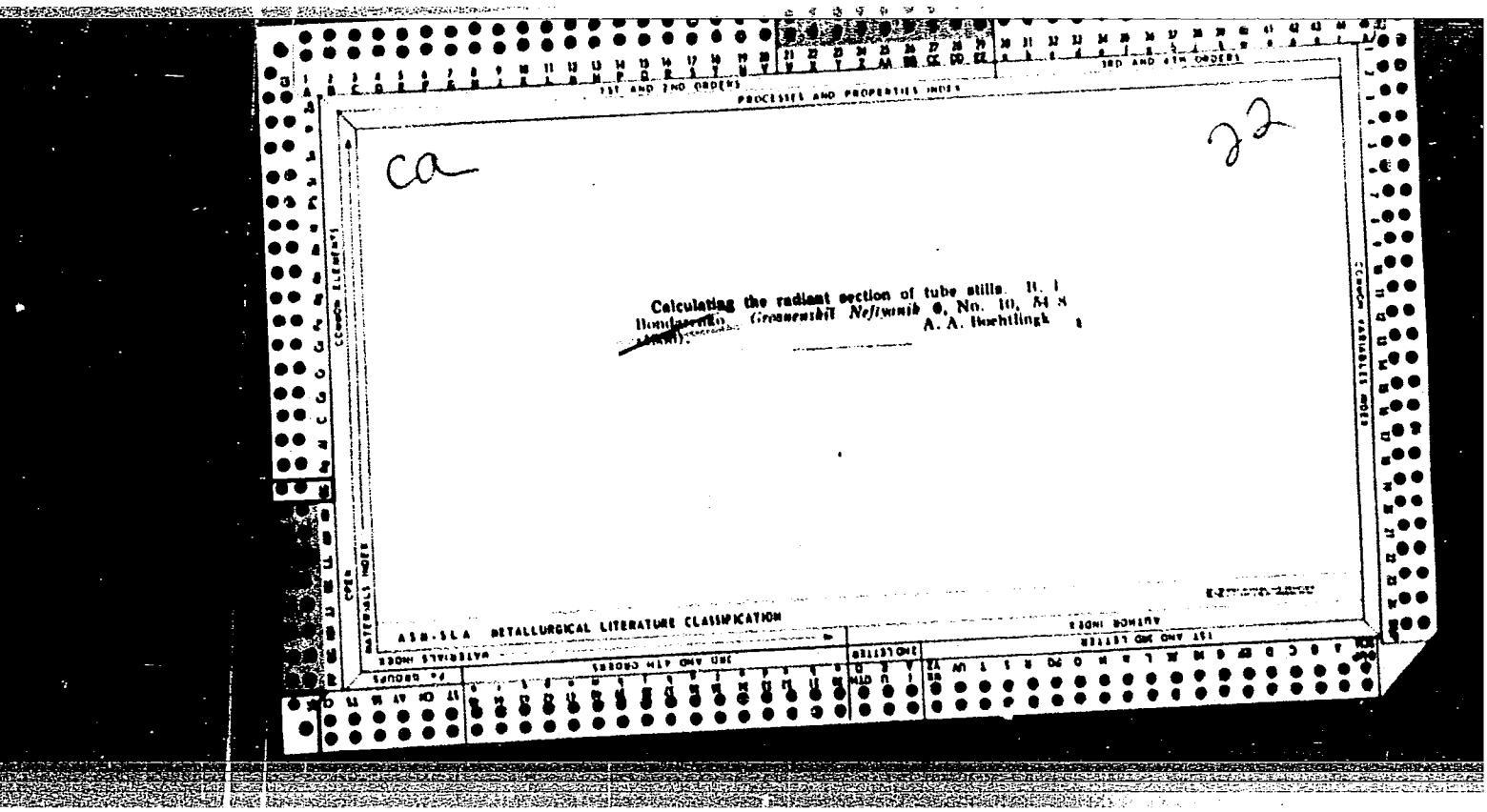


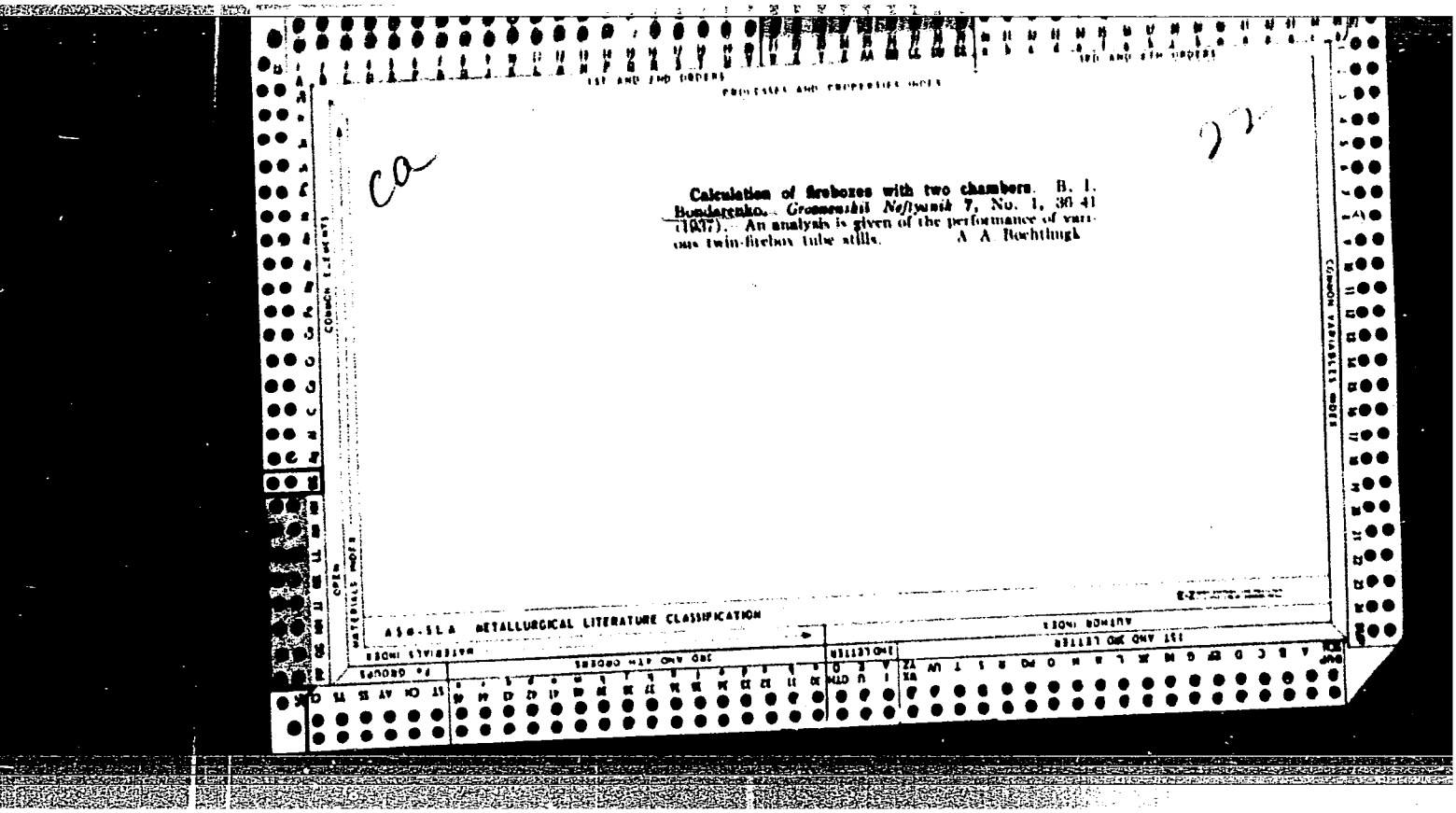
1a

22

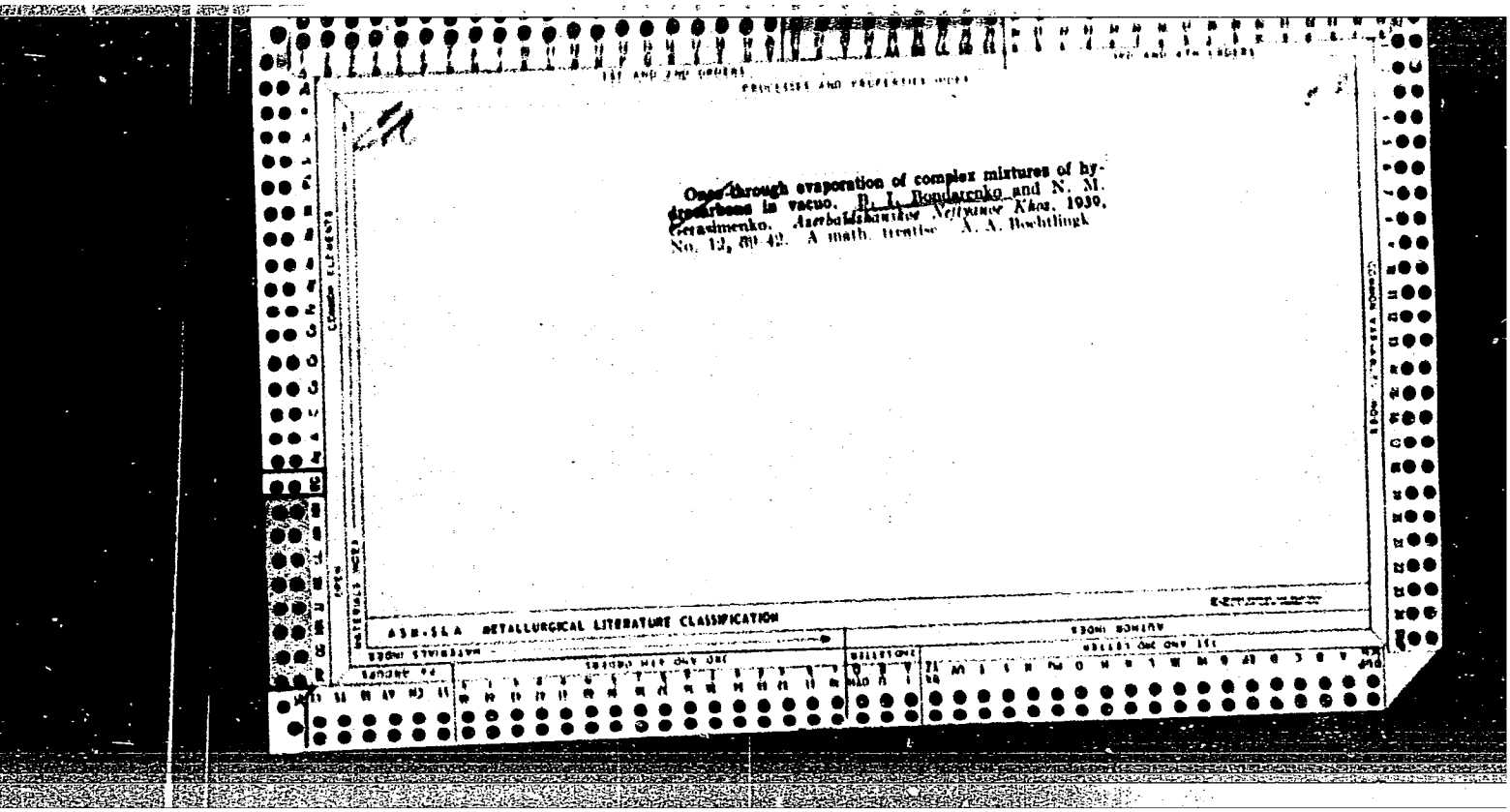
Standardization of coolers for refineries. B. I. Bondarenko and A. I. Skoblo. *Neftyanoe Khozyaistvo* 26, No. 5, 50-1(1934).—The performance of various coolers (condensers), is analyzed and various recommendations for their improvement are made. A. A. Boehtlingk

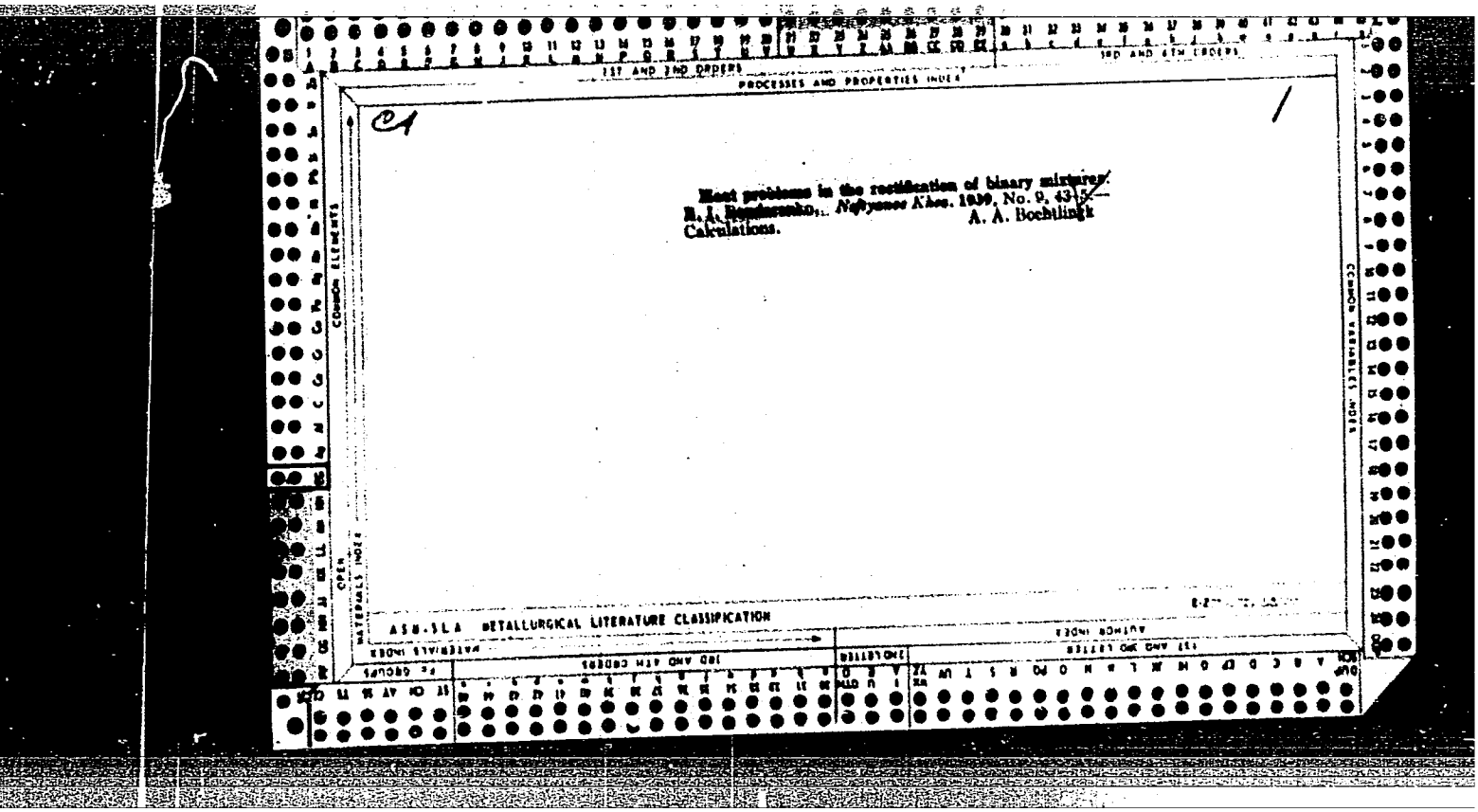
A10.51A METALLURGICAL LITERATURE CLASSIFICATION





Calculation of fireboxes with two chambers. B. I. Bondarenko. *Grozenskii Neftyanik* 7, No. 1, 36-41 (1937). An analysis is given of the performance of various twin-firebox tube stills. A A Boehtlingk





BONDARENKO, B. I.

"The Determination of Product Yields in Catalytic Cracking," Pet. Ind., No. 1, 1951.

AID P - 1138

Subject : USSR/Chemistry

Card 1/1 Pub. 78 - 16/25

Author : Bondarenko, B. I.

Title : Material accounting in the catalytic cracking process with re-circulation

Periodical : Neft. khoz., v. 32, #11, 56-62, N 1954

Abstract : General discussion of fraction distillation in cracking with re-circulation is presented. The relative amount of the re-circulating component or the coefficient of re-circulation is computed with experimentally-determined formulas and correction coefficients. Distribution of the distillating components is tabulated for various operating conditions. Three tables, 2 charts and 2 Russian references (1934-1950).

Institution : None

Submitted : No date

AID P - 2695

Subject : USSR/Chemistry

Card 1/1 Pub. 78 - 13/21

Authors : Bondarenko, B. I., Grushin, A. F., Ivanyukov, D. V. and Zlotnikov, L. Ye.

Title : Experiment in reconstruction of an oil-refining installation

Periodical : Neft. khoz., 33, 5, 58-62, My 1955

Abstract : In the reconstruction of an oil-refining installation its capacity has been increased and higher fractions obtained. The flow diagrams of the old and the reconstructed installations are shown. The main difference is that in the new installation the charging stock enters by two different lines, one part (about 55%) through heat exchangers and the other part (about 45%) through the coils of the vacuum line furnace.

Institution : None

Submitted : No date

AID P - 3628

Subject : Chemistry

Card 1/1 Pub. 78 - 12/20

Author : Bondarenko, B. I.

Title : New foreign oil processing plants

Periodical : Neft. khoz., v. 33, #10, 60-71, 0 1955

Abstract : New petroleum fuel processing plants located outside of Russia and its satellites are described, namely: Petrofina Refinery (Quebec, Canada); Ferndale Refinery of the General Petroleum Corp (Washington, U.S.A.); Gewerkschaft Erdöl-Raffinerie Emsland, Lingen-Holthausen (West Germany); Durban Refinery (South Africa); Kwinana Refinery (Australia); Aden Refinery (Arabian Peninsula). Some others are briefly mentioned. Diagrams, tables, 22 foreign references, 1946-1955.

Institution : None

Submitted : No date

BONDARENKO, B.I.; NIKULIN, D.D.; SUKHANOV, V.P.; KLEYMENOVA, K.F., vedushchiy redaktor; TROFIMOV, A.V., tekhnicheskiy redaktor

[Catalytic cracking] Kataliticheskii kreking. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1956. 208 p. (Cracking process) (MLRA 9:9)

IVANYUKOV, D.V.; BONDARENKO, B.I.; GRACHEV, D.S.

Increasing the productivity of a pressure and vacuum refining plant by means of radical rearrangement. Neft.khoz.34 no.7:38-46 Jl '56. (MLRA 9:10)
(Petroleum--Refining)

PHASE I BOOK EXPLOITATION 1183

Bondarenko, Boris Il'ich

Ustanovki kataliticheskogo krekinga (Catalytic Cracking Units) Moscow, Gostoptekhizdat, 1958. 303 p. 2,500 copies printed.

Ed.: Kleymenova, K.F.; Tech.Ed.: Trofimov, A.V.

PURPOSE: The book is intended for engineers and technicians specializing in petroleum refining.

COVERAGE: The book describes catalytic cracking units with circulating catalysts. Flowsheets of industrial catalytic cracking units are given. Methods of preparing raw materials and the construction of the most important units are discussed. The author thanks Ya.N. Frenkel' for reading the manuscript, B.K. Amerik for his comments and also K.F.Kleymenova and N.V. Matveyeva for their assistance in preparing the manuscript for publication. There are 253 references, of which 61 are Soviet, 188 English and 4 German.

Card 1/5

Catalytic Cracking Units

TABLE OF CONTENTS:

Card 2/5

Catalytic Cracking Units

Card 4/5

AVAILABLE: Library of Congress

Card 5/5

TM/mas
2-13-59

PARKHOMENKO, Vasiliy Yefimovich, dotsent; PICHUGIN, A.P., inzh., red.; BONDARENKO, B.I., retsenzent; LEVINA, Ye.S., vedushchiy red.; FEDOTOVA, I.G., tekhn.red.

[Technology of petroleum and gas refining] Tekhnologiia pererabotki nefti i gaza. Izd.2., perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 452 p. (MIRA 12:1)
(Petroleum--Refining) (Gas, Natural)

11(4) SOV/92-58-9-28/36

AUTHORS: Bondarenko, B.I., Staff Member of the Petroleum Institute, and Sukhanov, V.P., Staff Member of the Gosplan of the USSR

TITLE: Formation of Coke in a Reactor and Gas Oil Recycling (Koksoobrazovaniye v reaktore i retsirkulyatsiya gazoylya)

PERIODICAL: Neftyanik, 1958, Nr 9, pp 29-30 (USSR)

ABSTRACT: In a letter containing a reference to a book by B.I. Bondarenko, published in 1956 and entitled "Catalytic Cracking", I. Sivakov, senior operator, raises the question as to how the increased recycling of the light gas oil affects the formation of coke. At the same time in a letter referring to the same book G. Konyayev, engineer of the Salavat refinery, asks for the clarification of a similar question on how the gas oil recycling influences the formation of coke. They both state that the actual results of catalytic cracking operations contradict

Card 1/2

Bondarenko's assertion that the higher coefficient of recycling gas oil increases the yield of gasoline and decreases the yield of gas and coke. In reply to the above-mentioned letters the authors of the present article confirm that, in principle, the statement contained in the Bonarenko book is correct. However, the authors emphasize that the yield of catalytic cracking products depends on the different conditions under which the catalytic cracking unit is run, as well as on the composition of the feed stock used. These conditions are discussed at length by the authors who point out that the problem is rather complicated and many factors should be taken into account to permit one to draw the right conclusion. Refiners and members of scientific institutes are invited by the authors to express their opinion in Neftyanik as to how they propose to reduce the formation of coke in a catalytic cracking unit.

ASSOCIATION: Neftyanoy institut im. Gubkina i Gosplan SSSR (The Petroleum Institute im. Gubkin, and the Gosplan of the USSR)

AL'TSHULER, Anatoliy Yevgen'yevich; KOROTKOV, Petr Ivanovich; KAZANSKIY, Vasiliy Leonidovich; GERASIMENKO, Nikolay Mikhaylovich; BONDARENKO, B.I., kand.tekhn.nauk, red.; LUKASHEVICH, I.P., kand.tekhn. nauk, red.; YEFREMOVA, T.D., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Production of lubricants from high-sulfur petroleum crudes] Proizvodstvo smazochnykh masel iz sernistykh neftei. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 189 p. (MIRA 12:10)
(Lubrication and lubricants) (Petroleum--Refining)

BRAZHNIKOV, Vasiliy Timofeyevich. Prinimal uchastiye: MALINOVSKAYA, N.P., inzh.. SKOBLO, A.I., retsenzent; LONDARENKO, B.I., retsenzent; YEFREMOVA, T.D., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Present-day units for manufacturing lubricating oils] Sovremennye ustanovki dlia proizvodstva smazochnykh masel. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 355 p. (MIRA 12:11)
(Lubrication and lubricants)

KOLDOVKIN, A.Ya., inzh.; Prinimali uchastiye: KHOKHRYAKOV, P.A., dotsent; BONDARENKO, B.I., dotsent

Choice of a phenol-reclamation flowsheet in selective refining of oils. Nauch.zap.Ukrniiproekta no.4:132-140 '61. (MIRA 15:1)
(Phenols) (Petroleum--Refining)

SKOBLO, Aleksandr Ionovich, dots.; TREGUBOVA, Irina Anan'yevna, dots.; YEGOROV, Nikolay Nikolayevich, dots.; BONDARENKO, B.I., kand. tekhn. nauk, retsenzent; BABUSHKINA, S.I., ved. red.; KLEYMENOVA, K.F., ved. red.; POLOSINA, A.S., tekhn. red.

[Processes and equipment of the petroleum refining and petrochemicals industries] Protsessy i apparaty neftepererabatyvaiushchei i neftekhimicheskoi promyshlennosti. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1962. 652 p. (MIRA 15:2)

(Petroleum--Refining)

BONDARENKO, B.I.

New petroleum refineries in Canada. Khim.i tekh.topl.i masel 7 no.2:68-72 F '62. (MIRA 15:1)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad.Gubkina.
(Canada—Petroleum refineries)

BONDARENKO, B.I.; NICHIPORENKO, O.S.

Investigating gas-oxygen burners of low output to obtain reducing gas. Gaz. prom. 9 no.9:27-31 '64. (MIRA 17:10)

L 44295-65 EEC-4/EWA(h)/EWT(1)/EEC(m)/EEC(f) Pg-4/Pq-4/Peb GS

ACCESSION NR: AT5011604 UR/0000/64/000/000/0239/0242

42
29
8+1

AUTHOR: Kleynman, Ya. M.; Nadel', A.A.; Bondarenko, B.A.

TITLE: Sensors for remote measurements of electrical parameters

25

SOURCE: Vsesoyuznoye soveshchaniye po magnitnym elementam avtomatiki, telemekhaniki, izmeritel'noy i vychislitel'noy tekhniki. Lvov, 1962. Magnitnyye elementy avtomatiki, telemekhaniki, izmeritel'noy i vychislitel'noy tekhniki (Magnetic elements of automatic control, remote control, measurement and computer engineering); trudy soveshchaniya. Kiev, Naukova dumka, 1964, 239-242

TOPIC TAGS: remote electrical measurement, electrical sensor, current measurement, voltage measurement, frequency measurement, remote control

ABSTRACT: Prototypes and experimental versions of sensors for remote measurements of electrical parameters are being developed at the SPKB "YuZhMONTAZHAVTOMATIKA" trust. The prototypes of sensors for remote measurements of the 50 cps AC current and the resistance (with respect to the ground) of the three-phase insulated 50 cps network are already being tested while the design of the sensor for the active current of the symmetric three-phase 50 cps network is just being completed. The article describes

Card 1/2

L 44295-65

ACCESSION NR: AT5011604 13

these instruments and presents tabulated laboratory test data concerning the previously completed units for remote measurements of both AC and DC current and AC and DC voltages. "The work was participated in by a group of coworkers of the SPAB including Ya. M. Kleynman, A. A. Nadel', B.A. Bondarenko, V.V. Shashery, Yu. Ya. Brevde, V.N. Chernyavskiy, L.I. Volchenko, V.I. Barkov and L.V. Faydysh, as well as V.I. Gronshteyn and Ye. I. Andrianov, who are now associated with other enterprises, along with A.K. Nesteruk, worker at the SPKB." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 29Sep64 ENCL: 00 SUB CODE: EE,IE

NO REF SOV: 000 OTHER: 000

Card 2/2

ZATULOVSKIY, B.G.; PONOMAREVA, G.V.; DZETSINA, L.V.; BONDARENKO, B.I.; GURMAN, M.M.

Further study of sporadic cases of exanthematous typhus in Kiev. Zhur.mikrobiol., epid.i immun. 32 no.12:109-112 D '61. (MIRA 15:11)

1. Iz Kiyevskogo instituta epidemiologii i mikrobiologii.
(KIEV—TYPHUS FEVER)

BONDARENKO, B.K.; DEMIDOVICH, V.N.

A generator of chaotic pulses. Geofiz. prib. no. 12:90-92 '62. (MIRA 17:5)

1. VMOLA.

YERMOL'YEVA, Z.V.; TRAKHTENBERG, D.M.; BONDARENKO, B.N.

Isolation and characteristics of prodigiosin from Bacterium prodigiosum in submerged cultures. Antibiotiki 9 no.5:397-403 My '64. (MIRA 18:2)

1. TSentral'nyy institut usovershenstvovaniya vrachey i Vsesoyuznyy nauchno-issledovatel'skiy antibiotikov, Moskva.

BONDARENKO, B.N.

Deep cultivation of Bacterium prodigiosum. Antibiotiki 9 no.9: 814-818 S '64. (MIRA 19:1)

1. Kafedra mikrobiologii (zav. - deystvitel'nyy chlen AMN SSSR prof. Z.V. Yermol'yeva) TSentral'nogo instituta usovershenstvovaniya vrachey i Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov, Moskva.

BONDARENKO, B.R., inzhener (g.Novocherkassk); SITNIK, N.Kh., inzhener (g.Novocherkassk); STEKOL'SHCHIKOV, V.A., inzhener (g.Novocherkassk).

Single-phase industrial frequency electric locomotives. Zhel.dor. transp. 37 no.11:8-14 N '55. (MLRA 9:2)
(Electric locomotives)

BONDARENKO, B.R.; YANOV, V.P.; CHERNYAVSKIY, S.N.

Further development of the construction of electric locomotives. Zhel.dor.transp. 47 no.4:43-49 Ap '65. (MIRA 18:6)

1. Direktor Novocherkasskogo elektrovozostroitel'nogo zavoda i Vsesoyuznogo nauchno-issledovatel'skogo i proyektno-konstruktorskogo instituta elektrovozostroyeniya (for Bondarenko). 2. Glavnyy inzh. Vsesoyuznogo nauchno-issledovatel'skogo i proyektno-konstruktorskogo instituta elektrovozostroyeniya (for Yanov). 3. Nachal'nik otdela tekhniko-ekonomicheskikh issledovaniy Vsesoyuznogo nauchno-issledovatel'skogo i proyektno-konstruktorskogo instituta elektrovozostroyeniya (for Chernyavskiy).

SOV/162-58-3-25/26

5(4)

AUTHOR: Bondarenko, B.V.

TITLE: The Problem of the Nature and the Determination of the Thermoionic Constant A (K voprosu o prirode i opredelenii termoelektronnoy postoyannoy A)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Radiotekhnika i elektronika, 1958, Nr 3, pp 184-191 (USSR)

ABSTRACT: The possible reasons of the divergence between the experimental values of the thermoionic constant A and its theoretical value $A_c = 120.4$ a/cm^2 degree^2 are investigated for different cathode types. The author arrives at the following conclusions: a) The theory of spots cannot satisfactorily explain the anomaly of the value A in the case of semiconductor cathodes without contradicting the results of cathode investigations by electronic microscopes. b) The anomalous values A, obtained by the Richardson method for semiconductor cathodes, may be explained by the temperature dependence of the work function, found by means of shifting the character-

Card 1/3

The Problem of the Nature and the Determination of the Thermoionic Constant A

istic, which is caused by a change of the location of the electrochemical potential level. c) The Richardson method does not provide reliable values of the work function in case of coated cathodes. The method of determining the medium work function at $A_0 = 120.4$ a/cm^{2}degree^2 according to measured values of the current emission and the cathode temperature, is more reliable for any type of cathode. This method permits a simultaneous determination of the temperature dependence of the work function within the range of measuring temperatures under the condition that $1 - \bar{R} \ll 1$, whereby $\bar{R}$ is the medium factor of electron reflection at the emitter-vacuum boundary. There are 11 graphs, and 13 references, 3 of which are English, 1 German, 1 Japanese, 1 Indian and 7 Soviet.

The Problem of the Nature and the Determination of the Thermoionic Constant A

ASSOCIATION: Kafedra elektronnykh i ionnykh priborov Moskovskogo fiziko-tekhnicheskogo instituta ((Chair of Electronic and Ionic Devices of the Moscow Physics Engineering Institute)

SUBMITTED: March 29, 1958

Card 3/3

BONDARENKO, B.V.; OSTAPCHENKO, Ye.P.

Thermionic properties of alkaline earth tungstates. Nauch.dokl. vys.shkoly; radiotekh.i elektron. no.4:239-245 '58. (MIRA 12:6)

1. Moskovskiy fiziko-tekhnicheskiy institut.
(Alkaline earth tungstates)

BONDARENKO, B. V. Cand Tech Sci -- (diss) "Peculiarities of the thermoelectronic properties of semiconductor-type cathodes." Moc, 1959. 22 pp (Min of Higher Education USSR. Mos Phys-Tech Inst), 130 copies (KL, 47-59, 114)

66325

~~5 (0), 9 (2, 3)~~ 9.3120 SOV/162-59-1-25/27

AUTHOR: Bondarenko, B.V.

TITLE: The Thermionic Properties of Scandium, Yttrium and Lanthanum Oxides

PERIODICAL: Nauchnyye doklady vysshey shkoly, Radiotekhnika i elektronika, 1959, Nr 1, pp 211-219

ABSTRACT: The author presents the results of an investigation into the thermionic properties of scandium, yttrium and lanthanum oxides. Sofar, the thermionic properties of these materials have not been studied in a wide temperature range. These oxides have a sufficiently high melting point with a known crystal structure and they are of interest for manufacturing thermionic cathodes working at higher temperatures, as for example, the thorium oxide cathodes. The pure scandium, lanthanum and yttrium oxides were pulverized and prepared in a methyl alcohol suspension, which was applied to a tungsten core, 2 mm wide, 5 cm long and 35 microns thick. The density of the oxide coating

Card 1/5

The Thermionic Properties of Scandium, Yttrium and Lanthanum Oxides

changed within the limits of 2-4 $mg \cdot cm^{-2}$ at a thickness of 25-30 microns. The experimental device was a planar diode with a system of working and protecting anodes. The emission of the working anodes, placed on both sides of the cathode strip, was measured by a galvanometer with a maximum sensitivity of $5 \cdot 10^{-9}$ amps. The cathodes to be investigated were connected to one of the arms of a Wheatstone bridge. The cathode temperature was determined by the resistance of the tungsten core. The maximum error in determining the work function φ_T according to the graphs of C.G. Jansen and R. Loosjes [Ref 4] amounted to 0.25%. The voltampere characteristics of the cathodes, plotted in the range of anode voltages of 100-500v, showed a saturation character, whereby the saturation current value was limited to U_a = 400 v for determining φ_T. The correction for the Schottky effect was equal to 0.012 electron-volt, with an electrode gap of 3.5 mm, ie. it re-

4

The Thermionic Properties of Scandium, Yttrium and Lanthanum Oxides

mained within the accuracy limits of φ_T measurements. The values of the work function φ_T were calculated according to the density of saturation currents for certain temperatures at a value of the thermionic constant of $A_o = 120.4$ amps·cm^{-2}, whereby also the temperatures factor of the work function $\frac{\Delta \varphi}{\Delta T}$ could be determined for measurements in a temperature range of 1300-2000°K. It was established that $\frac{\Delta \varphi}{\Delta T}$ does not only change its magnitude in this temperature range, as for example, for scandium and yttrium oxides. A qualitative explanation of the behavior of $\frac{\Delta \varphi}{\Delta T}$ is given for the state of a cathode, immediately after the thermal activation and also for the stable emitting state. The sign of $\frac{\Delta \varphi}{\Delta T}$ is negative at low temperatures and posi-

The Thermionic Properties of Scandium, Yttrium and Lanthanum Oxides

tive at high temperatures. The investigation results for scandium, yttrium and lanthanum oxides are compiled in a table. These oxides are of interest as cathode materials, except lanthanum oxide, whose emission is somewhat lower than that of scandium and yttrium oxides; lanthanum oxide is highly volatile in the range of operating temperatures. The comparison of the thermionic properties of scandium and yttrium oxides with those of thorium oxide shows only insignificant deviations. According to measurements of Menar [Ref 9], well-activated thorium oxide shows also a break of the Richardson lines at high temperatures, resulting in values of $\varphi_0 = 1.6\text{-}1.7$ electron-volts at $A = 2 \cdot 10^{-3}$ amps$\cdot$cm$^{-2}\cdot$degree^{-2}. This means that at $T = 2000^{\circ}K$, the current density of a thorium oxide cathode will be equal to $j = 4 \cdot 10^{-1}$ amps$\cdot$cm^{-2}, which corresponds to $\varphi_T = 3.60$ electron-volt at $A_0 = 120.4$ amps$\cdot$cm$^{-2}\cdot$degree^{-2}. Yttrium oxide cathodes are easily sin-

The Thermionic Properties of Scandium, Yttrium and Lanthanum Oxides

tered on a tungsten core and have other advantages compared to the thorium oxide cathodes. There are 3 graphs, 1 table and 11 references, 9 of which are Russian, 1 German and 1 English.

ASSOCIATION: Kafedra elektroniki Moskovskogo fiziko-tekhnicheskogo instituta (Chair of Electronics of the Moscow Engineering Institute of Physics)

SUBMITTED: July 19, 1958

Card 5/5

BONDARENKO, B.V.

Thermoelectonic properties of titanium, zirconium, hafnium, and thorium oxides. Nauch. dokl. vys. shkoly; radiotekh. i elektron. no.2:330-335 '59. (MIRA 14:5)

1. Kafedra elektronnykh i ionnykh priborov Moskovskogo fiziko-tekhnicheskogo instituta.
(Thermionic emission) (Metal oxides)

BONDARENKO, B.V.

Temperature dependence of the work function of a thermionic cathode. Trudy MFTI no.4:62-71 '59. (MIRA 13:9)
(Thermionic emission) (Work function)

BONDARENKO, B.V.

Methods of determining thermionic emission constants of semiconductor cathodes. Trudy MFTI no.4:72-84 '59. (MIRA 13:9)
(Semiconductors)
(Work function)
(Thermionic emission)

SOV/109-4-6-25/27

AUTHORS: Bondarenko, B.V. and Tsarev, B.M.

TITLE: Thermo-electronic Characteristics of the Metal Oxides of the III and IV Groups (Termoelektronnyye svoystva okislov metallov III i IV grupp)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 6, pp 1059 - 1060 (USSR)

ABSTRACT: The metal oxides Sc_2O_3, Y_2O_3, La_2O_3, TiO_2, ZrO_2 and HfO_2 have comparatively high melting points and are therefore of interest as the materials for the cathodes operating at high temperatures. ThO_2 is an oxide of the same type. The investigation described aimed at determining the emissivity of the above oxides. The cathodes prepared from La_2O_3 and TiO_2 were activated at a temperature of 2 200 °K, while the remaining oxides were activated at 2 600 °K. The current-temperature curves for all the materials are indicated in the figure on p 1059. It is seen that the Richardson curves for all the oxides except TiO_2 consist of two linear portions. This is thought to

Card 1/3

be due to the dependence of the electrochemical potential of the semiconductor cathodes on the equilibrium concentration of donors within the investigated temperature interval (B.V. Bondarenko - Ref 10). The table on p 1060 shows the values of φ_o and A obtained from the Richardson curves. The work function of the cathodes φ_T is also shown in the table. From the investigation, it is concluded that apart from ThO_2 and Y_2O_3, the hafnium oxide HfO_2 is the most promising material. This is principally due to the fact that HfO_2 forms very stable layers which are strobgly attached to the tungsten core of the cathode.

Thermo-electronic Characteristics of the Metal Oxides of the III and IV Groups

There are 1 figure, 1 table and 10 references, 4 of which are English, 1 French and 5 Soviet: 1 Soviet reference is translated from French and 1 from English.

SUBMITTED: January 5, 1959

BONDARENKO, B.V.

PHASE I BOOK EXPLOITATION SOV/3827

Moscow. Fiziko-tekhnicheskiy institut

Issledovaniya po fizike i radiotekhnike (Research in Physics and Radio Engineering) Moscow, Oborongiz, 1959. 170 p. (Series: Its: Trudy, vyp. 4) Errata slip inserted, 2,150 copies printed.

Sponsoring Agency: [illegible]. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya.

Ed.: K.Ya. Zaytseva, Engineer; Ed. of Publishing House: S.D. Antonova; Tech. Ed.: L.A. Garnukhina; Managing Ed.: A.S. Zamorskaya, Engineer.

PURPOSE: This book is intended for scientific workers, students in advanced courses and engineers.

COVERAGE: This is a collection of 15 studies dealing with problems of radio physics, electronics, quantum physics, and aerodynamics. The studies examine the method of least squares as applied to the propagation of radio waves in the presence of a plane junction, the general conditions of stability of a random process at the output of a linear filter while a periodic unstable random process is supplied at the input of the filter, the results of experiments with a ferromagnetic specimen with large Barkhausen jumps as an explanation of the noise mechanism in ferromagnets at cyclic magnetization reversal, experiments for the determination of thermal characteristics and the results of an experimental study of a turbulent boundary layer in a supersonic flow. No personalities are mentioned. References accompany most articles.

TABLE OF CONTENTS:

3/

84075
S/181/60/002/009/016/036
B004/B056

9.3120 (1137, 1138, 1331)
26.1632

AUTHOR: Bondarenko, B. V.

TITLE: The Temperature Dependence of the Work Function in Hot Cathodes of the Semiconductor Type

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2140 - 2151

TEXT: The author discusses the different results obtained by measuring thermionic emission by employing various methods (Refs. 2-5). For the purpose of explaining this problem, finely ground Sc_2O_3, Y_2O_3, La_2O_3, TiO_2, ZrO_2, HfO_2, and basic Ba, Sr, and Ca tungstates of the type Me_3WO_6 (particle size $< 1\ \mu$) were suspended in methyl alcohol and applied onto a 30 μ thick tungsten band, which served as cathode. The temperature dependence of the work function φ_T was measured at 10^{-7} - 10^{-6} torr within the temperature range of 300 - 2000°K. Fig. 1 shows the function $i_a^{2/3} = f(U_k)$ for Y_2O_3 and Ba_3WO_3, Fig. 2 shows $\varphi_T(T)$ for Sc_2O_3, Y_2O_3,

Card 1/4

84075

The Temperature Dependence of the Work Function in Hot Cathodes of the Semiconductor Type

S/181/60/002/009/016/036
B004/B056

La_2O_3, TiO_2, ZrO_2, HfO_2; activation of the oxides occurred at 2200 - 2600°C. The lower values of φ_T relate to the maximum degree of activation of the cathode, and the higher values to the stable state. Fig. 3 compares the current characteristics of the tungsten filament (T = 2700°K) and the oxide-covered tungsten band (T = 300°K) at the beginning of the experiment with that after 60 min. Table 1 gives the thermionic properties of the metal oxides of the III and IV groups of the periodic system, and Table 2 contains those of the tungstates. Fig. 4 shows the occurrence of the intrinsic conductance of Ba_3WO_3 at $T \simeq 1800°K$. This effect is not observed in oxides. From these data the author draws the following conclusions: 1) The high emission of thermionic cathodes consisting of oxides of the III and IV group is based upon the fact that, in consequence of the activation at high temperature, free metal penetrates into the oxides. The oxide coating is then no pure semiconductor but a mixture with metal. 2) In the case of stable emission the values obtained for φ_T, which characterize the temperature dependence

4

Card 2/4

The Temperature Dependence of the Work Function in Hot Cathodes of the Semiconductor Type

of the mean work function, agree with those obtained by changing the space charge. 3) The experimental values of φ_T within the temperature range measured at a stable state of the oxides agree with the theoretically expected temperature dependence of the electric potential in donor semiconductors. They are not influenced by the surface-state fields. 4) Between φ_T and the lattice constant $a_o A$ there is a qualitative connection in the case of a cubic crystal structure. With increasing $a_o A$, $\Delta\varphi_T/\Delta T$ rises, so that the thermionic constant $A = A_o \exp(-1/k)(\Delta\varphi_T/\Delta T)$ becomes smaller. 5) The lattice constant of the oxides is reduced by a value, which is uniquely connected with the concentration of the excess metal it contains. The radiographically determined contraction of the lattice proves the occurrence of oxygen vacancies and also that the entire excess metal is in the lattice and not on the surface. 6) All equations obtained by transformation of the theoretical emission equation with $A = A_o = 120.4$ a.cm^{-2}.deg^{-2} are applicable only subject to certain

Card 3/4

84075

The Temperature Dependence of the Work Function in Hot Cathodes of the Semiconductor Type

S/181/60/002/009/016/036
B004/B056

restrictions. The only reliable method is determining the work function by calculating it from $j = A_o T^2 \exp(-\varphi_T/kT)$ on the basis of the values measured for $j\left[a.cm^2\right]$ and T^oK. The author thanks Professor Boris Mikhaylovich Tsarev for supervising this investigation. There are 4 figures, 2 tables, and 14 references: 7 Soviet, 3 US, 2 British, 2 German, and 1 Japanese.

ASSOCIATION: Moskovskiy fiziko-tekhnicheskiy institut (Moscow Institute of Physics and Technology)

SUBMITTED: June 5, 1959

Card 4/4

26.2531
9.3120 (1003, 1137, 1140)

S/109/60/005/008/008/024
E140/E555

AUTHORS: Bondarenko, B.V., Ostapchenko, Ye.P. and Tsarev, B.M.

TITLE: Thermionic Properties of Alkali-Earth Metal Tungstates

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.8, pp.1246-1253

TEXT: The work functions and structures of a number of compounds, listed in the three tables, were studied by means of X-rays and electron-microscopy. The objects were, firstly, to find the barium tungstate compounds with optimum stability in vacuum at working temperatures of 1400-1700°K; secondly, to find those with the best emission properties; and, thirdly, to determine the effects of substitution of calcium and strontium for barium in the tungstates. The technology employed has been previously described (Ref.1). It was found that these tungstates may be synthesized by sintering in air, as well as in hydrogen as previously done. The high-temperature stability of Ba_3WO_6 and $BaWO_4$ was already known from the literature; a new phase Ba_2WO_5 is found to have the same property. A number of compounds has been studied for the first time. It was found that Ba_3WO_6 on tantalum

Card 1/2

S/109/60/005/008/008/024
E140/E555

Thermionic Properties of Alkali-Earth Metal Tungstates

has better emission properties than on tungsten. For the tantalum base the basic tantalate is superior to tungstate. There are 3 figures, 3 tables and 3 references: 2 Soviet and 1 non-Soviet.

SUBMITTED: December 21, 1959

Card 2/2

83276

26.1632
9.3120

S/109/60/005/009/026/026
E140/E455

AUTHORS: Bondarenko, B.V., Yermakov, S.V. and Tsarev, B.M.

TITLE: Thermionic Properties of Alkali-Earth Metal Tantalates

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.9, pp.1553-1555

TEXT: This is a continuation of earlier work (Ref.1) in which basic barium tantalate was found to have higher emission properties than barium tungstate. A table of the 22 compounds studied is given on p.1555. It is found that basic barium tantalate has higher emissivity than basic barium tungstate but is less stable thermally. Its limiting temperature is therefore 1500°K, as compared with 1700 to 1800°K for the latter compound. There are 3 figures, 2 tables and 3 Soviet references.

SUBMITTED: April 1, 1960

Card 1/1

29327
S/109/61/006/010/026/027
D201/D302

26.2532

AUTHORS: Bondarenko, B.V., Yermakov, S.V., and Tsarev, B.M.

TITLE: Thermo-electric properties of barium hafnates and perrhenates

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 10, 1961, 1773 - 1775

TEXT: In conjunction with the results of study of thermo-electric properties of barium tantalates by B.V. Bondarenko, Ye.P. Ostapchenko, and B.M. Tsarev, (Ref. 1: Radiotekhnika i elektronika, 1960, 5, 8, 1246) which were shown to be slightly better than those of barium tungstanate, the authors give the results of their determining thermo-electric properties of barium hafnates of type $(BaO)_n (HfO_2)_m$ with n : m = 2 : 1; 3 : 1; 5 : 1; 7 : 1; and of barium perrhenates $(BaO)_n (Re_2O_7)_m$ with n : m = 1 : 2; 2 : 1; 3 : 1; 5 : 1; 7 : 1; The study of barium hafnates and rhenates with different content of barium oxide was required to determine the influence of barium oxide on the thermoelectric properties of complex oxi-

Card 1/3

Thermo-electric properties of ...

des and to find the composition of oxides which would be stable in vacuum at operating temperatures. A tungsten tape, cleaned by heating in vacuo, was used as the base. The temperature was being determined by a tungsten iridium thermo-couple. The process of activation of cathode consisted of prolonged heating with the outflow of emission current, starting with the temperature corresponding to a low emission 10^{-8} - 10^{-7} ampere^2 and ending at the temperature beyond which the emission started to fall due to the increases work function φ. After the activation has been finished, the emission was measured within a wide range of temperatures after increasing it and decreasing until a stable and reproducible emission current was obtained. All analyzed substances had a minimum of the work function, corresponding to that of a simple model of an n-type semiconductor. The thermoelectric properties of barium hafnates and rhenates as obtained in the experiment are given in tabulated form. The results obtained show that as compared with those of tungstenates and even tantelates of barium, the rhenates, and in particular hafnates of barium have somewhat better emission properties. It is stated in conclusion, however, that until the above substances can

Card 2/3

Thermo-electric properties of ...

be recommended for use in thermal emission cathodes, further investigations into their evaporating and thermal stability properties have to be carried out. There are 1 table, 2 figures and 1 Soviet-bloc reference.

SUBMITTED: June 15, 1960

Card 3/3

41016

S/058/62/000/009/055/069
A057/A101

26.1640

AUTHORS: Bondarenko, B. V., Tsarev, B. M.

TITLE: On the nature of temperature dependence of the work function of semiconductor thermocathodes

PERIODICAL: Referativnyy zhurnal, Fizika, no. 9, 1962, 3, abstract 9-3-61 ("Tr. Mosk. fiz.-tekhn. in-ta", 1962, v. 8, 14 - 20)

TEXT: Investigating thermoelectronic properties of semiconductor cathodes in a wide temperature range, usually a break of Richardson's straight lines (RS) is observed. The breaks of straight lines for thermocathodes of the semiconductor type have the same character; at low temperatures the RS are much steeper than at high temperatures. It is demonstrated that the behavior of experimental RS for semiconductor thermocathodes can be explained uniquely by the variation of the electrochemical potential in a wide temperature range. A consideration of the variation of the electrochemical potential in different temperature ranges makes it possible not only to explain the physical meaning of the values obtained from the inclination of the RS, but also to calculate from the experi-

Card 1/2

On the nature of temperature dependence of...

mental data the value of the external work function, the energy of ionization of the admixture and its concentration for the semiconductor. There are 6 references.

A. F.

[Abstracter's note: Complete translation]

Card 2/2

44198
S/109/62/007/012/020/021
D271/D308

9,3120
26.1640

AUTHORS: Bondarenko, B. V. and Yermakov, S. V.

TITLE: Thermionic properties of carbides of metals belonging to groups IV and V

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 12, 1962, 2099-2101

TEXT: Measurements of thermionic emission of some metal carbides are reported. Experimental diodes had cathodes of W tape with a thin film of investigated carbide on one side and a thermocouple on the other side, and Ta anodes. The effective work function was determined from measured values of temperature and emission current density. A linear dependence of work function on temperature was found in the temperature range investigated. The following values of the work function $\varphi_E = \varphi_o + \frac{\partial \varphi}{\partial T} T$ eV are tabulated: TiC: $3.46 + 2.10^{-4}$ T (1300 - 1750°K) and $3.6 + 1.10^{-4}$ T (1750 - 2200°K),

Card 1/2

Thermionic properties of ... S/109/62/007/012/020/021
D271/D308

ZrC: 3.24 + 2.10^{-4} T, HfC: 3.42 + $1.75.10^{-4}$ T, VC: 3.85, practically invariable in the range of 1300 - 2100°K, NbC: 4.1 - $2.5.10^{-4}$ T, TaC: 3.98 - $1.5.10^{-4}$ T. Work function values at 300°K, 1400°K and 2000°K are also tabulated, as well as the carrier concentration at 2000°K. The sign of the temperature coefficient of the work function depends on the character of doping centers: donor in metal carbides of IV group and acceptor in V group. Zr and Nb carbides are the most promising for use in thermionic cathodes. Current density of 3.6 A/cm^2 was obtained for NbC at 2000°K. There are 3 figures and 2 tables.

SUBMITTED: May 25, 1962

Card 2/2

BONDARENKO, B. V.,

"The use of rare-earth metals for thermionic cathodes."

report presented at the Conf. on New Trends in the Study and Applications of Rare Earth Metals, Moscow, 18-20 Mar 63

L 15037-65 EWT(1)/EWP(e)/EWG(k)/EWT(m)/EPA(sp)-2/EPF(n)-2/EPR/EPA(w)-2/T/EWP(t)/
EWA/EWP(b) Pz-6/Pab-24/Ps-4/Pu-4 IJP(c)/ESD(gs) AT/WH/JD/JG/MLK
ACCESSION NR: AT4048698 S/0000/64/000/000/0086/0091

AUTHOR: Bondarenko, B. V.; Tsarev, B. M.

TITLE: Rare earth metals and their compounds as thermoelectronic cathode materials

SOURCE: Vsesoyuznoye soveshchaniye po splavam redkikh metallov, 1963. Voprosy* teorii i primeneniya redkozemel'ny*kh metallov (Problems in the theory and use of rare-earth metals); materialy* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 86-91

TOPIC TAGS: rare earth metal, rare earth oxide, rare earth boride, cathode metal, thermoelectronic cathode, thermoelectronic emission

ABSTRACT: Forty years ago, thorium in the form of thorium oxide was first used as a tungsten coating for cathodes. During the last 15 years, powders of thorium oxide and W, Mo and Re have been used. The working temperature of such cathodes is near 1800-2000K and is somewhat below the temperature of pure metallic cathodes (2450-2700K for W, 2300-2400K for Ta). Oxide cathodes based on the rare earth oxides can be used at 900-1150K. At temperatures between 1150 and 1800K, yttrium and lanthanum are used. It may be assumed, on the basis of similarity with the films of thorium, barium and cesium on tungsten, as well as thorium on tantalum, molybdenum and rhenium, that the films of

Card 1/3

different rare earth metals may be satisfactory. Many papers have been published on the emission of the refractory compounds of the rare earth metals, namely the borides and oxides. Tests made by the authors indicate the stable conditions which exist for the oxides of metals in the third and fourth groups of the periodic table. There are no reliable data on the evaporation rates of the rare earth metals. The only paper published on this problem, by Kulverskaya and Maslovskaya, indicates only the qualitative rate for the rare earth oxides. It shows the relatively high volatility of the oxides of rare earth metals of the first sub-group, and the low values for the oxides of gadolinium and the second sub-group, as well as yttrium oxide. On the basis of such comparisons it is recommended that, besides yttrium oxide, the oxides of dysprosium, gadolinium and neodymium be used. Compounds of other rare earth metals may also be usable. Many papers have also been published on the emission of the borides of the rare earth metals, mainly hexaborides which have the highest stability when heated in a vacuum. At present, the wide use of hexaboride cathodes is limited not only by the "rarity" of the rare earth metals, but by the complex technology required for their pressing, cutting, melting, soldering, etc. The improvement of these processes will require much research. It is possible that double

L 15037-65
ACCESSION NR: AT4048698

and even more complex hexaborides of rare earth metals with high specific electrical resistance will solve these problems. Orig. art. has: 6 tables.

ASSOCIATION: None

SUBMITTED: 13Jun64 ENCL: 00 SUB CODE: MM, GP

NO REF SOV: 012 OTHER: 004

Card 3/3

L 15038-65 EWT(m)/EWP(t)/EWP(b) ESD(gs) JD/JG/MLK
ACCESSION NR: AT4048699 S/0000/64/000/000/0092/0101

AUTHOR: Bondarenko, B. V.; Yermakov, S. V.; Tsarev, B. M. 8

TITLE: Thermoelectronic emission of the rare earth oxides 27 27 III

SOURCE: Vsesoyuznoye soveshchaniye po splavam redkikh metallov, 1963. Voprosy* teorii i primeneniya redkozemel'ny*kh metallov (Problems in the theory and use of rare-earth metals); materialy* soveshchaniya. Moscow, Izd-vo Nauka, 1964, 92-101

TOPIC TAGS: rare earth metal, rare earth oxide, thermoelectronic emission

ABSTRACT: The authors studied the thermoelectronic emission of the oxides of all rare earth elements except promethium. At 1700K, the effective work of emission for all rare earth oxides is approximately 3.3±0.1 electronvolt. There are many publications on the emission of rare earth metals, but they are contradictory with respect to the purity, type of coated metal and other data. In the present work, rare earths of a purity not less than 99.5% were coated on tungsten. The metal powders were ground in an agate mortar until the grains were 1-2 microns in size and were then used, as an ethanolic suspension, to form a 30-micron-thick layer 4 mm in length on one side of a tungsten strip 30 microns thick, 2.5 mm wide and 20 mm long. A tungsten-iridium

Card 1/2

L 15038-65

ACCESSION NR: AT4046699

thermocouple was used to measure the cathode temperature. All tests were made in a 10^{-6}mm Hg vacuum at 900-1100 to 1700-1900K. The cathode temperature was increased until it became highly activated with a higher emission current and a sharp drop in emission. At this temperature, the emission density was calculated. Since the rare earth metals fall between the third and fourth groups of the periodic table, their oxides as a whole have intermediate values of emission (2.7-3.7 electronvolts for stable and 2.55-3.7 electronvolts for the active condition). The tests showed that sesquioxides are formed by all the rare earth metals, resulting in high-temperature modifications of hexagonal structure of the La_2O_3 type. The tests also indicated the possibility of using rare earth metals for thermocathodes, especially the oxides of lanthanum, samarium and dysprosium. Final recommendations can only be made, however, when reliable information becomes available on the pressure of the oxide vapors of the rare earth metals. Samarium oxide cannot be recommended for use as thermocathodes, even though it has a relatively high emission capacity. Orig. art. has: 5 figures and 4 tables.

ASSOCIATION: None

SUBMITTED: 13Jun64 ENCL: 00 SUB CODE: MM, GP

NO REF SOV: 006 OTHER: 003

Card 2/2

BONDARENKO, B. V.

15-57-1-291

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 1, p 40 (USSR)

AUTHOR: Bondarenko, B. V.

TITLE: Geologic Explanation of the Magnetic Field at the Pripyat'Depression in the Southeastern Part of the BSSR (K voprosu geologicheskogo istolkovaniya magnitnogo polya Pripyatskoy vpadiny v Yugo-Vostochnoy chasti BSSR)

PERIODICAL: Izv. AN BSSR, 1955, Nr 1, pp 53-61

ABSTRACT: Three types of interrelationships become apparent when the geological structure of the Pripyat depression in BSSR and the geophysical data are considered together: 1) Intense gravitational minima, coincident with a depressed and undisturbed magnetic field, are located in the district of granitic rocks over a relatively large section of the Precambrian foundation. 2) Intense

Card 1/2

Geological Explanation of the Magnetic Field (Cont.)

gravitational and magnetic maxima correspond to the distribution of gabbro rocks at the protrusions of the Precambrian foundation. 3) Intermediate zones or stages of the gravitational field and magnetic maxima correspond to the distribution of the effusive rocks associated with deep tectonic faults in the cyrstalline foundation.

Card 2/2

V. V. K.